

# Peace of mind

Enabling increased productivity and profitability in the cement industry with ABB's System 800xA

Heikki Tanskanen, Alfredo Zeta

It is no secret in the cement business - as with many other industries - that basic automation solutions are fast becoming a commodity product. However many "patchwork" automation systems exist either because plant managers have had no choice but to buy the equipment they need from various suppliers or the overall concept was never properly considered or thought out to begin with. In many cases, the end result is a poor unsatisfactory working solution.

This is where ABB Process Automation and its family of Industrial<sup>IT</sup>® System 800xA products and solutions stand out and differentiate themselves. ABB uniquely identifies itself not only as an automation product supplier, but also as: a manufacturer and supplier; an engineering, commissioning, services and support partner; and a cement process specialist. This "single point of responsibility" is what cement customers are looking for in a competent automation partner.

The construction and modernization of cements plants is, in many ways, very similar to other industries. Cement customers and producers aim to produce a high quality end product efficiently using the most cost effective means possible, while at the same time minimizing overall environmental impact.

Global players in the cement industry comprise companies such as Holcim (Switzerland), Lafarge (France) and Heidelberg (Germany) as well as a number of small local companies. The majority of cement projects, including complete new plants as well as revamps and modernizations, usually occur in developing countries and emerging markets - including Asia and the Middle East. This is no surprise because booming and emerging economies are usually accompanied by a need for new buildings, bridges and other infrastructures.

#### Challenges facing the cement customer

Each project is unique in its complexity and is heavily dependent on local conditions. Not many people realize that the cement manufacturing process is in fact a chemical process which is fully dependent on the quality of local raw materials and their inherent natural variations. The cement manufacturing process is also demanding in terms of energy consumption and environmental considerations.

Cement production demands a sound automation solution which can deal with these variations at a moments notice, and adapt to it's "new conditions" as efficiently as possible. In addition, an automation solution can only be successful when the client's automation partner and supplier fully understands the

## Operational profitability

complexities of the cement manufacturing process, and has the experience necessary to realize these unique solutions.

What is common to all cement manufacturers, as well as to most industries, is the necessity for operational excellence, productivity and profitability, minimized environmental impact, global and local competence, responsibility and support, all of which can be summed up as risk management and minimization. Building a brand new Greenfield cement plant is clearly a major undertaking but the modernization of an old plant to the latest standards, production and efficiency levels while it is still in operation<sup>1)</sup> demands a whole different set of skills and competences for the supplier and partner.

This is where ABB shines and stands out as the leader in the field. ABB's Minerals Business Unit, based in Switzerland and with worldwide responsibility for all cement customers and projects, has clearly established itself as the industry leader in automation solutions.

### ABB's distinctive approach

ABB's cement organization has been serving customers since the 1960s, and during that time it has amassed a wealth of experience. One of the main reasons the company has always provided world class automation solutions to its customers is because it is also the developer and manufacturer of the full range of products that it supplies. All automation related hardware, software, tools and engineering as well as service and support are provided to its customers' base worldwide via ABB without the involvement of external third parties. ABB's process knowledge, built into standard packages, libraries and automation solutions for the cement industry, has been continuously evolving since the 1960s. Today, this knowledge is fully implemented and standardized in ABB's Industrial<sup>IT</sup>® (IIT) System 800xA platform.

For the cement industry, for example, a suite of re-usable objects for control

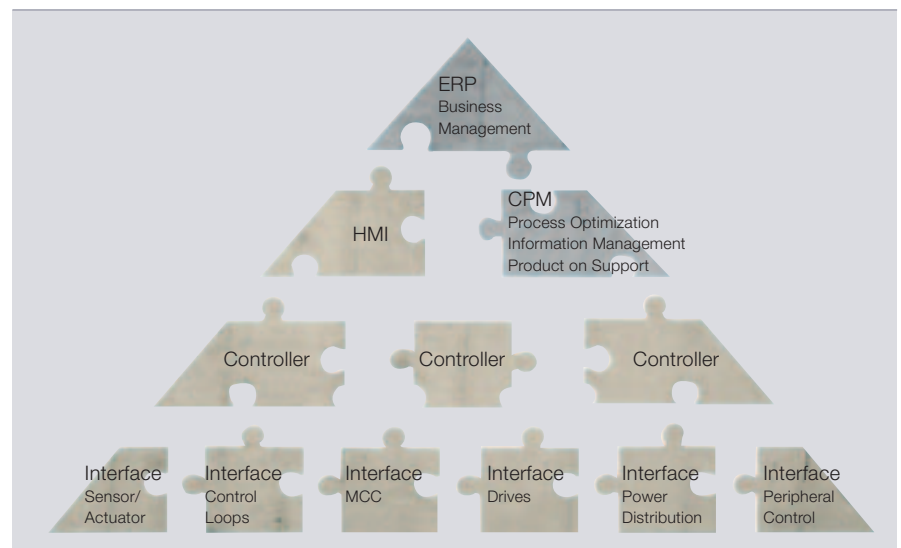
applications based on four decades of experience exists. System 800xA embraces the principles of open, real-time networking with its unique integrated object oriented system environment for operations, control and engineering, and provides a scalable solution that spans and integrates loop, unit, area, plant and inter-plant controls.

The System 800xA Minerals Library, for instance, includes pre-engineered modular objects containing control logic, human machine interface (HMI)

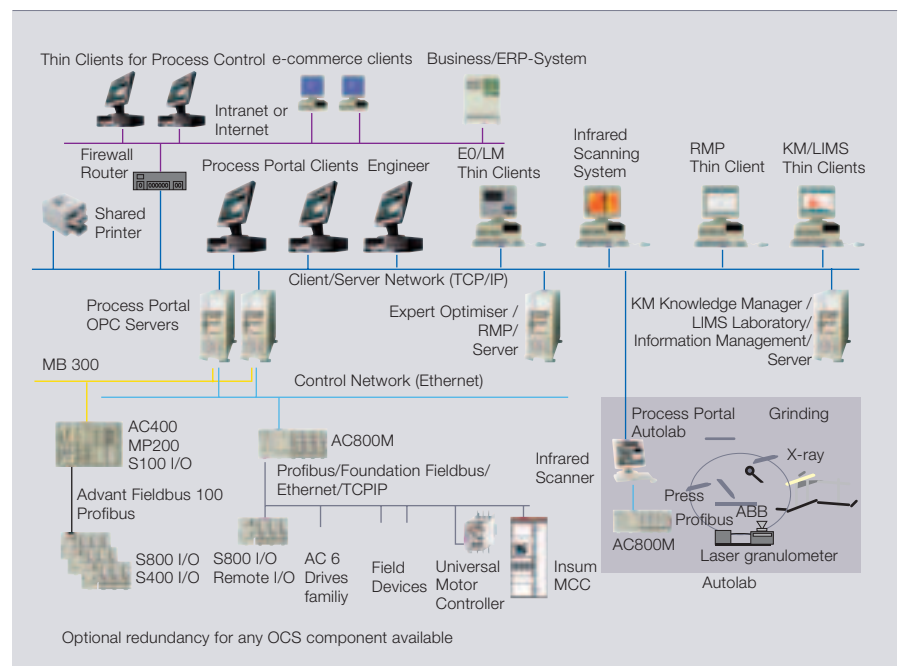
and communication for application development with drag-and-drop facilities **1**. It provides a complete set of operator functions, realistic process displays with graphic elements and faceplates, superior trending capabilities, intelligent alarm and event handling with remote messaging, reporting, as well as integrated drawings and wiring diagrams.

Such features give ABB the unique advantage of being able to handle very complex projects, from turnkey

### 1 Modular automation



### 2 Industrial<sup>IT</sup> System 800xA in the Cement and Minerals industry



new greenfield plants to those that need revamping and modernizing under severe time, budget and schedule constraints <sup>2</sup>. The advantage for the customer is long term supplier commitment and the assurance that, as its business evolves, its automation partner, ABB, can always provide a professional, reliable and compatible solution to the existing, older technologies installed in the plant.

### Holcim (Maroc) Settat plant

Holcim's new Settat cement plant (see title picture) is located south of Casablanca in Morocco. At the end of 2004, Holcim decided to establish a complete cement factory by adding a new cement grinding plant and a clinker production line. Operation of the grinding plant was scheduled for the third quarter of 2006, and the clinker production line is expected to be in full operation by the end of 2007. The main quarry is located 25km from the main plant and provides the raw materials for the process. A railroad links the two locations.

ABB engineered, supplied, installed and commissioned the complete system - including electrical distribution - within the planned but very demanding short construction schedule. The IIT 800xA based solution was implemented in a step by step fashion, thanks to its plug and

play functionality. Software compatibility throughout the project was ensured with solid engineering foundations, consistent methods and the use of standard libraries which comprised ABB's years of process experience with similar projects.

Holcim Settat not only has ABB's leading automation solution, but it will also benefit from advanced energy monitoring and reduced consumption, environmental management and power monitoring. On top of this, the company will profit from ABB's production information management and optimization capabilities. Finally, the overall automation solution will be combined into one system at the main plant and remote quarry, all using the same design and application principles, thus simplifying overall operation and maintenance.

### ABB – more than just automation

As a leading provider to the cement industry, ABB takes on the sole responsibility of providing quality products, solutions and standards, and the means for increased productivity and efficiency while always considering the customer's Total Cost of Ownership (TCO) and environmental impact. Because of proven methods, modules, technologies and platforms, planning

and experience, ABB's automation solutions are in a class of their own. More impressively, complete turnkey solutions are also provided that cover: the raw materials needed (RMP-Raw Material Preparation); optimization (EO-Expert Optimizer); labs (AutoLab); knowledge management (KM-Knowledge Manager); and dispatch. In addition, electrification to automation to integrated ERP systems and non-ABB products are also covered.

Pure Automation, in the traditional sense, is greatly expanded with IIT to include CPM (Collaborative Production Management) <sup>3</sup> and ERP (Enterprise Reporting Systems) as well as access and control of substations, power distribution, MCCs, generators, quality and laboratory systems, expert and optimization systems as well as business systems including SAP. This also includes the seamless integration of industry standard technologies like TCP/IP, Fieldbus / Profibus and others. In addition, ABB's turnkey solutions can also include full electrification, cabling, sensors, motors and drives, lighting, fire and video systems as well as the installation and commissioning of all items provided.

ABB has installed Automation systems for over 500 production lines, 30 in the last 3 years alone. The company's installed base and advanced automation solutions save customers over 100 million Euros per year on energy costs alone. Four decades of experience combined with its ability to develop and manufacture the full range of Automation products it supplies means ABB can take sole responsibility for complete automation solutions. ABB products are complemented with the company's skills, which are in turn transferred to local teams and partners to be used in the industries and markets they serve. Customers therefore have peace of mind in the knowledge that, as their own businesses grow, ABB's Automation solutions will grow with them.

### Heikki Tanskanen

#### Alfredo Zeta

ABB Switzerland Ltd, ATB  
heikki.tanskanen@ch.abb.com  
alfredo.zeta@ch.abb.com

### <sup>3</sup> CPM solutions for the cement industry

